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Listing of All Claims Including Current Amendments

1.   (currently amended) A method of producing nitrogenous semiconductor crystal materials of the form $A_X B_Y C_Z N_V M_W$ in the nature of strata on a wafer, wherein A, B and C represent elements of elemental group II or group III, N represents nitrogen, M represents an element of elemental group V or group VI, and X, Y, Z, V and W represent the mol fraction of each element in $A_X B_Y C_Z N_V M_W$, in a reactor comprising a reaction chamber defined by a set of chamber walls and an upper side and lower side thereof, a first wafer support positioned within the reaction chamber, a gas inlet through which process gases flow into the reaction chamber, a gas mixing system in fluid communication with the reaction chamber, a gas outlet through which the process gases are discharged from the reaction chamber, a second wafer support positioned on the first wafer support, a heating system for heating the first wafer support, and a controller for controlling the process gases and the reaction chamber; the method comprising:

determining a plurality of temperatures selected from the group consisting of the temperature of the gas inlet, T_1, the temperature of the chamber walls, T_2, the temperature of the first wafer support, T_3, the temperature of the second wafer support, T_4, the temperature of the gas outlet, T_5, the temperature of the gas mixing system, T_6, the temperature of the upper side of the reaction chamber, T_7, and the temperature of the heating system, T_8;

determining the temporal variation of at least one of the plurality of temperatures;

calculating at least one gradient between ~~at least two of the plurality of temperatures~~ a set of temperatures, the set of temperatures selected from the group consisting of the temperatures of the gas outlet and the wafer supports, the temperatures of the gas mixing system and the gas inlet, and the temperatures of the upper side of the reaction chamber and the first wafer support;